Resilient Supply Chain are needed to address climate challenges

December 05, 2023

Ahead of COP 28, we launched a sustainability series with some of IBM's thought leaders.

Jean-Francois Barsoum is IBM Canada's senior innovation executive for research, environment and Smart Cities. In this series, Jean-Francois speaks on trusted, sustainable and resilient supply chains and how they are needed to address climate challenges in an interdependent world.

What are the challenges that businesses face to create resilient supply chains, particularly post-COVID-19?

For the last couple of years, supply chains have really been under pressure because of the pandemic and now geopolitics is beginning to play a role here. In the past, organizations optimised for cost and efficiency, and minimised inventories; but we saw how this approach created brittle supply chains that gave way relatively quickly when problems appeared.

In an era of rising prices and sluggish demand growth, we're collectively trying to make the supply chain more resilient while minimising cost implications, and this is where trade-offs become complex. You can carry more inventory or source locally to lower risks of delivery lag, but this is not free…

Climate impacts, related regulations and carbon pricing will also have an impact on how to build a viable supply chain of tomorrow. It's therefore more important to better predict demand, supply, price and cost fluctuations using artificial intelligence (AI) and other data to plan for production – give a buffer, but no more than what is needed.

"Businesses need to have a lot more intelligence about the 'why' rather than be reactive and try to predict what's going to happen to the market."

How should businesses think about technology when it comes to climate challenges?

We have the capability to use technology to solve important issues. What we need to do is be more imaginative and creative about how we apply technologies to solve some of our biggest environmental problems – and climate change is one of our biggest problems.

For instance, we can use generative AI to determine new ways of building batteries. Currently, we're faced with health, environmental and political concerns surrounding the production, mining and disposal of batteries. Generative AI can help researchers and developers to create new ways to build batteries. I believe that AI and quantum computing can help researchers find new solutions to the energy storage problem and IBM is building accelerated discovery and foundation models to do just that.

We've also built a geospatial foundation model that helps us understand the impact of forest fires and flooding in areas that aren't necessarily monitored by physical sensors on the ground. We can use satellite imagery and other data to try and predict what's going to happen. This helps us deal with some of the consequences of climate change.

"Technology is a tool and it's up to us to decide not only how to use it, but how it is used effectively to solve humanity's mot pressing challenges."

Where do we go from here?

There are two ways we should categorize green technology: the way we apply technology to reduce emissions ("mitigation"), and the way use technology to deal with the consequences of climate change ("adaptation"). Businesses need to do as much on either side of these domains. For a long time, environmentalists (I count myself among them) were laser-focused on preventing climate change rather than deal the consequences. But today, we're already seeing the effects of climate change and need to do our best to deal with the consequences. Both mitigation and adaptation are important and we need to find ways that address them.

As we look to the future of mitigation, we need to do more when it comes to optimizing how people and goods are moved so that we can lower carbon emissions that are tied to transportation.

Adaptation is a challenge that all companies must tackle together; but I would argue that this is an area where IBM's DNA is particularly relevant. We have a history of creating and using technology to solve serious societal and business issues. IBM is very conscientious about applying technologies, including AI, in ways that are responsible and aimed at making meaningful impact.

Finally, AI can give us an edge in dealing with all these challenges. It can be used to identify and evaluate qualitative risks in different ways compared to what we were able to do before. AI can assess the impacts of and propose changes to policies and regulations – if we train it with the right set of scientific data and legal information. But there are endless domains where Generative AI can help us comb through more content and distill back what is relevant -- assisting individuals, leaders and companies in making the right environmentally-positive decisions, when faced with a mountain of conflicting or confusing information and data.

This is the world we are heading towards… and IBM is already working with a number of clients to get there.

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